Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
VIRTUAL GEOSATELLITE, LLC	)	
	)	
Petition for Rulemaking to Make Available C-band Spectrum for Non-Geostationary Fixed-Satellite Service Gateway Operations in the United States	)	RM-9650

COMMENTS OF GE AMERICAN COMMUNICATIONS, INC.

GE American Communications, Inc. ("GE Americom"), by its attorneys and pursuant to Section 1.405 of the Commission's rules, hereby submits its comments on the petition of Virtual Geosatellite, LLC ("Virtual Geo") to initiate a rulemaking proceeding to make C-band spectrum available for use by non-geostationary ("NGSO") fixed satellite service ("FSS") systems. 1/

GE Americom does not oppose the Virtual Geo Petition. However, any rulemaking regarding geostationary orbit ("GSO") and NGSO sharing proposals in the C-band must take into account: (1) the higher susceptibility of GSO FSS operations in the C-band to harmful interference; (2) the need for aggregate

1/ *See* Petition for Rulemaking of Virtual Geosatellite, LLC, RM-9650, filed Apr. 27, 1999 ("Virtual Geo Petition"). The Commission placed the Virtual Geo Petition on public notice on June 11, 1999. *See* FCC Public Notice, Report No. 2334 (rel. June 11, 1999).

interference limits; and (3) the importance of ensuring the enforceability of both aggregate and single system limits.

BACKGROUND

In its petition, Virtual Geo requests that the Commission initiate a rulemaking proceeding to adopt provisions that would permit NGSO operations in the C-band. Virtual Geo argues that such operations should be allowed provided that they create no noticeable degradation to GSO FSS service quality or availability, and do not constrain the future development of GSO FSS systems. Virtual Geo Petition at 6.

Virtual Geo requests a rulemaking in order to facilitate the processing of its application for authority to launch and operate a system of fifteen NGSO satellites in sub-geosynchronous inclined elliptical orbits. 2/ Virtual Geo proposes to provide service to customers using a combination of user and gateway links in the C-band and Ku-band. Virtual Geo Application at 1-2. Virtual Geo claims that its system will not interfere with existing or future GSO operations because its NGSO satellites will provide service only when separated from the geostationary arc by at least 40 degrees. *Id.*

Virtual Geo notes that the Commission is currently in the process of considering spectrum sharing parameters for NGSO operations in the Ku-band. 3/

2/ Application of Virtual Geosatellite, LLC, SAT-LOA-19990108-0007, filed Jan. 8, 1999 ("Virtual Geo Application").

3/ *See Notice of Proposed Rulemaking, Amendment of Parts 2 and 25 of the Commission's Rules to Permit Operation of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the Ku-band Frequency Range, et al.*, ET Docket No.

Virtual Geo requests that the Commission commence a similar proceeding to evaluate GSO/NGSO sharing in the C-band.

DISCUSSION

GE Americom has a strong interest in ensuring that any proposed use of C-band frequencies will not result in harmful interference to existing or future GSO FSS operations. GE Americom and its customers have invested billions of dollars in space stations and ground segment facilities in the C-band. These investments will be jeopardized if the Commission permits C-band NGSO operations without first conducting a comprehensive evaluation of the technical feasibility of co-frequency operations by GSO and NGSO systems.

As the Commission is aware, the subject of GSO/NGSO sharing in the Ku- and Ka-bands is being explored by the International Telecommunications Union ("ITU"). Provisional power flux density ("PFD") limits were adopted at WRC-97 for these bands, and extensive technical analysis evaluating these limits has been ongoing since their adoption. No final decision regarding sharing parameters has yet been reached.

Once Ku- and Ka-band limits are agreed upon internationally, the Commission will have to determine whether those limits are appropriate for the U.S. market. As noted above, the Commission has already begun a proceeding to

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98-206, RM-9147, RM-9245, FCC 98-310 (rel. Nov. 24, 1998) (initiating a rulemaking to evaluate the parameters under which NGSO FSS providers will be able to share Ku-band frequencies with GSO FSS operators).

consider whether and how NGSO FSS systems should be permitted to share Ku-band spectrum with existing GSO FSS licensees.

To GE Americom's knowledge, neither the ITU nor the Commission has undertaken an examination of issues with respect to the possibility of sharing C-band spectrum. Thus, significant work must be done to lay the groundwork before standards for GSO/NGSO sharing in the C-band can be established.

If the Commission does commence the rulemaking proceeding proposed by Virtual Geo to examine GSO/NGSO sharing possibilities in the C-band, three critical issues must be considered. First, the Commission must recognize as a technical matter that GSO operations in the C-band are highly susceptible to harmful interference. Specifically, because C-band GSO systems do not have a significant amount of margin built in to counter the effects of rain fade, they are less able to handle other sources of interference. As a result, some types of NGSO systems that have been proposed in other bands will clearly not be feasible in the C-band.

Virtual Geo contends that its proposed NGSO FSS system will not interfere with or constrain the future growth of any GSO FSS provider, including GE Americom, because its proposed system will be "quasi-geostationary" in nature. Virtual Geo proposes a constellation of space stations in highly elliptical orbits that will operate only when separated from the geostationary arc by at least 40 degrees. Virtual Geo Petition at 3.

GE Americom agrees that the Commission must ensure that any NGSO operations permitted in the C-band do not harm existing or future GSO services. The degree of angular separation from the plane in which GSO satellites operate will likely be a critical factor in any Commission analysis of the feasibility of C-band GSO/NGSO sharing. Any notice of proposed rulemaking regarding NGSO operations in the C-band should specifically address this issue.

Second, the Commission must consider the aggregate impact of C-band NGSOs to ensure that they do not collectively interfere with existing GSO operations in that band. To date, the Commission has not initiated a processing round for competing applications in response to Virtual Geo's C-band proposal. Any such processing round is likely to elicit a number of applications for different types of C-band NGSO systems. The Commission must consider these applications together. Only by setting an aggregate interference limit will the Commission be able to ensure that no harmful interference is generated by NGSO entrants as a group vis-à-vis existing C-band GSO systems.

Finally, in order for interference limits to be effective, the Commission will have to establish adequate measurement and enforcement mechanisms. Specifically, the Commission must have measures in place to ensure that violations of the limits can be identified and corrected. These measurement and enforcement mechanisms will be essential to ensuring that GSO services in the C-band are protected.

CONCLUSION

For the reasons described above, the Commission must carefully consider the impact NSGO FSS entry into C-band spectrum will have on existing licensees before moving forward. If and when the Commission decides to examine C-band sharing, it must make sure that the unique attributes of existing C-band GSO operations are considered, that aggregate interference limits are set, and that adequate measurement and enforcement mechanisms are established to protect existing C-band systems.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing Comments of GE American Communications, Inc. in RM-9650 was served by hand delivery (indicated by "*") or U.S. First Class mail, this 12th day of July, 1999 on:

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